



AGENDA

WATER RESOURCES ADVISORY COMMISSION

Thursday, March 6, 2008, 9:00 AM
 District Headquarters - B-1 Auditorium
 3301 Gun Club Road
 West Palm Beach, FL 33406

1. **Welcome and Introductions** - Michael Collins, Chair 15m
2. Member Issues 30m
3. Legislative Update - Ernie Barnett, Director, Office of Policy and Legislation 15p 15d
 See supporting document: [Legis Upd 3 3 08.pdf](#)
4. Water Conservation Program Update - Deena Reppen, Deputy Executive Director, Government and Public Affairs, SFWMD 15p 30d
5. WRAC Recreation Issues Workshop Report and Chandler Slough Action Item - David Lithgow, Chair, Recreation Issues; and Steve Coughlin, Director, Land Stewardship Div., SFWMD 15p 30d
 See supporting document: [WRAC Rec IWS 2 21 08 Mtg Sum.pdf](#)
6. WRAC Lake Okeechobee Committee Report - Malcolm "Bubba" Wade, Jr., Chair 15p 15d
 - Public Comment 15m
7. Lunch - 12:30 - 1:15 p.m. 45m
8. Statewide Stormwater Rule Update - Janet Llewellyn, Director, Water Resource Mgt. Div., Florida Department of Environmental Protection 15p 30d
 See supporting document: [State Strmwtr Pres WRAC 3 6 08.pdf](#)
9. WRAC Issues Workshop Report - Lake Okeechobee Service Area Water Availability Rule Development, Chip Merriam, Dep. Executive Director, Water Resources, SFWMD 15p 15d
10. Kissimmee Basin Issues Update - Lawrence Glenn, Dir., Kissimmee Div., SFWMD 15p 15d
 See supporting document: [Kiss Riv, Hdwtrs and Lks Upd WRAC 3 6 08.pdf](#)

- Public Comment

15m

11. Adjourn: 3:15 p.m

- | | | |
|-----------|---|------------|
| 1. | Welcome and Introductions - Michael Collins, Chair | 15m |
|-----------|---|------------|

2. Member Issues

30m

3. Legislative Update - Ernie Barnett, Director, Office of Policy and Legislation 15p 15d
See supporting document: [Legis Upd 3 3 08.pdf](#)



Legislative Update

Water Resources Advisory Commission Meeting
Thursday, January 3, 2008

Budget

The legislature is planning reducing the current year (FY07-08) state budget by as much as \$200 million to \$600 million during the first few days of the 2008 session. The House Policy and Budget Committee is proposing \$542 million in CURRENT year reductions.

Funding will also be very tight for the FY 08-09 budget as the legislature continues to respond to the down turn in revenues. However, the Governor's budget priorities are strong for the environment. Here is an excerpt from his budget announcement:

In addition to investing \$200 million in energy and climate change initiatives, Governor Crist proposes spending \$300 million to protect and preserve Florida's environment through Florida Forever, adding to the nearly 3.6 million acres of land already in conservation. The Governor also recommends \$200 million to continue the nation's largest environmental restoration project, which includes \$50 million for the restoration of Lake Okeechobee, \$50 million for its downstream coastal estuaries and \$100 million to fully fund the state's annual share of Everglades restoration.

As traditional water sources become overstressed and Southeastern states continue to experience extraordinary drought conditions, Governor Crist proposes \$60 million for alternative water supply development to encourage investment in desalination and reclamation and reuse of storm or waste water. In addition, the Governor is recommending \$25 million to protect water quality and develop water supplies in West Central Florida as well as \$5 million for the continued implementation of the Florida Keys Wastewater Management Plan.

Everglades Restoration Funding

Senator Saunders and Representative Mayfield filed identical bills to increase the bonding authority for the Save Our Everglades Trust Fund from \$100 million to \$200 million and also extend the authority to issue bonds to fund the State's share of Everglades restoration through the year 2020.

Indian River Lagoon

Representative Harrell has filed a House Memorial urging Congress to provide full funding for the Indian River Lagoon – South Restoration Project.

Property Taxes

Property Tax reform will continue to be on the forefront this session. Speaker Rubio announced that the House will focus on implementing long-term revenue caps on state and local governments. He also announced that the Government Efficiency and Accountability Council will examine property tax system issues such as the presumption of correctness and homestead loopholes. There will be legislation that is necessary to implement Amendment One which passed on January 29th. There are also numerous proposals by the Taxation and Budget Reform Commission that can be placed directly on the ballot for constitutional revisions. District staff are monitoring these activities to determine what impact they may have on district ad valorem revenues.

Agency Sunset

The Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, and the Water Management Districts are all being reviewed this session as part of the Legislature's Agency Sunset procedures. It is very early in the process but it appears that all reports will recommend the continuation of these agencies. The Legislature will most likely focus on recommendations on water management district governance and budget approval processes.

Florida Consumer Fertilizer Task Force

The Florida Consumer Fertilizer Task Force presented their Final Report to the Senate Committee on Agriculture. Recommendations include a model ordinance that local governments will be required to use in passing a fertilizer ordinance unless they can demonstrate that a stricter ordinance is necessary to address at least one of the following criteria: 1) the local government has verified impaired waters and is facing possible TMDL requirements under state or federal laws, 2) the local government has verified harm to human health or the environment that warrants additional consumer fertilizer requirements, or 3) the local government demonstrates a need to improve water quality and prevent future impacts of consumer fertilizers on the environment.

Florida Forever Successor Program

The Legislature may take up a successor program for Florida Forever. As the Florida Forever program enters its final years, there has been discussion of legislation this session to renew and refine the state's conservation land acquisition program.

Ocean Outfalls

The Department of Environmental Preservation has proposed legislation concerning ocean outfalls. Their proposal requires all ocean outfalls to go to advanced wastewater treatment by 2018 and to eliminate the discharges (except

for wet weather) by 2025. Miami-Dade County and Broward County continue to raise technical concerns.

Water Use Restriction Compliance

Senator Aronberg and Representative Williams filed legislation regarding Water Use Restriction Compliance. This legislation will improve our enforcement authority for non-compliance of water use restrictions. The bill will provide administrative enforcement authority for violations during declared water shortage emergencies. Currently, water use restriction violations are enforced through the County Courts. Under the proposed legislation the District simply sends the Administrative Complaint, and the violator then sends in the fine. If the violator challenges, the complaint will be settled through the State's Division of Administrative Hearings.

Session Started March 4th and will end on May 2nd

If you have any questions, please contact:

Ernie Barnett

Director of Policy and Legislation

South Florida Water Management District

(561) 951-2840

ebarnett@sfwmd.gov

4. Water Conservation Program Update - Deena Reppen, Deputy Executive Director, Government and Public Affairs, SFWMD 15p 30d

5. WRAC Recreation Issues Workshop Report and Chandler Slough Action Item - David Lithgow, Chair, Recreation Issues; and Steve Coughlin, Director, Land Stewardship Div., SFWMD

15p 30d

See supporting document: [WRAC Rec IWS 2 21 08 Mtg Sum.pdf](#)

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER RESOURCES ADVISORY COMMISSION
RECREATION ISSUES WORKSHOP, Thursday, February 21, 2007
5:00-8:00 P.M., Westgate River Ranch Lodge
3600 River Ranch Boulevard, River Ranch, FL 33867**

MEETING SUMMARY

This is a summary of the WRAC Recreation Issues Workshop on February 21, 2008, at River Ranch, FL. It has been posted on <http://my.sfwmd.gov/wrac>.

Action:

- **Participants agreed without objection to move the Chandler Slough proposal on to the WRAC and the SFWMD Governing Board.**

Item 1: David Lithgow, Chair, WRAC Recreation Issues, invited participants to the table, welcomed everyone and asked people to introduce themselves.

Rick Smith, SFWMD WRAC Facilitator, explained the purpose and function of the WRAC and the WRAC Issues Workshops. He directed attention to a handout explaining the WRAC Priority Plan and the section on Recreation Issues.

Larry Nutter, Naples Pathway Coalition, briefly described the "River of Grass Greenway" concept and handed out a brochure on the proposed pathway from Naples to Miami.

Item 2: Kissimmee Chain of Lakes Workgroup Update: Steve Coughlin, Director, Div. of Land Stewardship, SFWMD:

Steve Coughlin provided an update on the results of the Kissimmee Chain of Lakes facilitated stakeholders workgroup. Intent was to convene a representative group of 18 people representing recreational user groups, environmental groups, landowners, and agencies and develop consensus recommendations. Six meetings from February to October 2007 were held and final reports were provided in January, 2008.

The group set a high standard for achieving full consensus: In the absence of full consensus, a super-majority of 75% would be required for approval of recommendations. Full consensus was not achieved; however agreement was reached on the following:

- The Florida Fish and Wildlife Conservation Commission (FWCC) should create a wildlife management or similar area designation
- Designate hiking and kayaking trails
- Prohibit harvest of antlerless deer
- Open East Shore and West Shore for small game, turkey and hog hunting.
- Hog dogs and retrievers allowed; deer dogs prohibited.

Next steps: SFWMD Management review of results.

Discussion:

- Kissimmee River Valley Sportsmen's Association (KRVSA) representative said the Chain of Lakes stakeholder group was stacked against the sportsmen and that the vote sheet on the final report was incorrect and should show "3 for; 10 against; and 4 abstentions". KRVSA needs to be represented on any decision making group going forward.
- Costs to operate the facilitated stakeholder's group were estimated at \$50-75,000 with no consensus. This is a waste of taxpayer's dollars. Requested SFWMD not do this again.
- South Florida Sportsmen's Association representative urged moving forward with adding Chandler Slough to the Kissimmee Public Use Area and said that landowners were over represented on the Kissimmee Chain of Lakes public use stakeholder's group. Also stated that the deck was stacked against the sportsmen and the exercise was a waste of time.
- A representative of the Gardner Hunt Club disagreed and said it was not a total waste of time. There were areas of good agreement.
- A representative of the Everglades Coordinating Council said it is important to preserve cultural values such as the "Gladesmen Culture". Sportsmen and women push for and support multiple use, but not to exclusion of the historic and cultural uses. In certain areas, kayakers and canoeists have advocated exclusion of airboats.

Item 3: Kissimmee River Restoration Update - David Colangelo, Sr. Env. Scientist, Kissimmee Div., SFWMD:

David Colangelo provided a summary of Kissimmee River Restoration status. Phase IVA complete and now open to the public. Phase IVB will begin June 2008 to backfill four more miles of river. The area is expected to be closed to public access because of construction, starting in Fall, 2008. Istokpoga/S-67 boat ramp expected to be completed by January 2009. Area will be closed until complete; and, S-68 work will require closure until November, 2008.

Discussion:

- Phase IV-A Backfilling Project: What about public access to the area – if the project is completed why is the "Closed to Public Access" sign still there? SFWMD Response: Will to check on that and get back with group.
- Question about C-37 dredging. SFWMD Response: two years ago contractor shut down area to complete project. Concerned about access from southeast corner of Lake Hatchineha. Question about "U" shaped weir and location. Question about taking out S65C. Response: yes it will be removed.
- Concerns about prescribed burning on the restored river floodplain – need to do it. Response: Kissimmee and Land Stewardship divisions will work together on this.
- Concerns about percentage of submerged aquatic vegetation on lakes Kissimmee/Cypress/Toho. Concern that lakes are barren and there is too much spraying.

- Concern about amount of area closed due to construction, especially re: KICCO management area. SFWMD Response: this area had been on again, off again for construction; issue was mitigation area for flood protection levee. Plan is to close only about 40-60 acres. The rest will be open to public access.
- Chair: Need presentation on hydrology of the restored river. Concerned about availability of water for the restored river and floodplain marshes.

Item 4: Lake Kissimmee Boat Ramp, Chandler Slough Public Use, and Recreation Updates – Dan Cotter, Sr. Planner, Div. of Land Stewardship, SFWMD:

Dan Cotter updated the group about the status of the above items.

- Lake Kissimmee Boat Ramp: Conceptual plan presented to the public on January 16, 2006. Polk County will begin public meetings about operation of the Boat Ramp facility on 2/28/08. The SFWMD has allocated \$1 million in FY 2008 funds to complete the boat ramp and design is underway. Letter received by SFWMD from Polk County stating County intent to open the boat ramp 24/7 and allow firearms within boat ramp area.
- Public Use Plan for Chandler Slough presented to stakeholders on July 21, 2007. Recommendations incorporated into plan including a 100 yard no hunting zone near adjacent private properties with residences. Approximately 3,700+ acres of Chandler Slough (east of the C-38, south of US 98) are proposed to be added to the Kissimmee River Public Use Area. This proposal would request the FWCC to incorporate Chandler Slough into the Public Use Area, and will be presented to the WRAC on March 6 and the SFWMD Governing Board on March 13.
- Public access and parking facilities will be provided. Provisions have been made for hiking, airboating, and hunting, and preserving cattle leases.
- Allapattah Flats in Martin County will have new access points provided that will improve access and use.
- SFWMD has proposed designated primitive camp sites in the Kissimmee Chain of Lakes.
- A parking area and trailhead to connect to an existing boardwalk, is being constructed in Bird Rookery Swamp in Collier County.

Discussion:

- Kissimmee River Valley Sportsmen's Association (KRVSA) representative stated that:
 - the organization wants guaranteed access to the Shady Oaks Boat Ramp 24 hours/day/7 days/week, 365 days/year; and wants language added to the existing agreement with Polk County (executed in May 2007) to guarantee this level of access;
 - asked about selection of primitive camp sites and requested that other existing sites used by the public be designated;

- Need to work with FWCC now to get the prohibition of hunting antlerless deer in place before the next season begins.
- FWCC representative thanked SFWMD for boat ramp and will ask Polk County to support 24/7 access. Said language in Polk County letter reserving right to change rules in the future, if necessary based on conditions, would be standard for any land management agency.
- Participants agreed without objection to move the Chandler Slough proposal on to the WRAC and the SFWMD Governing Board.
 - Comment that the airboat trail at Chandler Slough is too small. SFWMD response: once restoration work is completed, the area will be re-evaluated for airboat use.
 - Comment supporting the 100 yard safety zone. Questions about the safety zone and how it impacts area residences. Suggestion made and accepted by SFWMD to go out with sportsmen and landowners and look at the areas in question.
 - Florida Trail Association thanked SFWMD for including a section of the Florida Trail in the Chandler Slough area.
 - KRVSA has suggested building storm shelters to provide cover for recreational users during thunder storms and safe airboat crossings in Gardner-Cobb Marsh. If SFWMD will provide the materials, KRVSA will provide the labor. KRVSA will provide GPS coordinates of proposed locations.
 - United Waterfowlers representatives requested longer waterfowl hunting season on Allapattah. Understood it would be the same as on other Wildlife Management Areas. FWCC Response: will review that issue.
 - Comments from several people concerned about walk-in access only at Allapattah Wildlife Management Area on Cottage Road, except during hunting season. SFWMD Response: considering a camp by permit program where campers with a permit could access the area by vehicle.
 - Everglades Coordinating Council representative suggested a clause be added to the Shady Oaks Boat Ramp agreement that the new site replaces a previously existing site that was open to the public 24/7/365 days/year.
 - Private landowner commented that the SFWMD should not designate camping sites where no restroom facilities are provided. The existing sites are a mess and are being very badly trashed by the public. Was a member of the Kissimmee Chain of Lakes Stakeholders group. Wants to reduce conflict between equestrians, hikers, hunter, campers, etc. As the area develops, recreational uses of the Chain of Lakes will increase. Appreciates the SFWMD approach to be pro-active about these issues.

Item 5: Recreation Planning Update – Jerry Krenz, Sr. Planner, Div. of Land Stewardship:

- Alligator hunting: Mr. Krenz said SFWMD proposed the same alligator hunting program as in 2007: STA-1, West, 100 permits and STA-5, 50 permits. Participants supported working with the FWCC to assess the

number of harvest permits, supported increasing the number of permits and supported proposing to the SFWMD Governing Board in April, the same or greater number of permits for STA-1, West and STA-5.

- He said the 2007 waterfowl hunting season was very successful. SFWMD and the FWCC are planning for the 2008 season. Details will be presented at the April WRAC Recreation Issues Workshop meeting.
- He explained a new 6-month trial program of bank fishing (catch and release) at STA-1, East, on the levees adjacent to the public access/parking facility on SR 80. The area would be opened to catch and release bank fishing from Friday through Monday each week from sun up to sun down. Intent is to try to open the area to coincide with the opening of the public access facility on SR 80 west of West Palm Beach. The SFWMD will monitor the fishing activities and review the program in six months. Boats (motorized or non-motorized) are prohibited. A contractor will mow and remove litter.
- Comprehensive Everglades Restoration Plan (CERP) "Master Recreation Plan": work continues on developing the Master Recreation Plan. There will be public meetings in April and May. Draft expected by December 2008.
- Developing plans for overlook and bird viewing platform as part of Biscayne Bay Coastal Wetlands project in Miami-Dade county.
- Harold A. Campbell Public Access Site at STA-3/4 was just dedicated and is now open. Motorized boats are allowed to fish the perimeter canals. A public access site at STA-1, West is expected to be opened by mid-June, 2008.

Future Meetings:

- **April 14, 2008 at SFWMD, Building B1 Auditorium, West Palm Beach, FL, from 5-8:00 p.m.**
- **June 16, 2008, Lower West Coast Service Center, 2301 MacGregor Blvd., Ft. Myers, FL, 5-8:00 p.m.**
- **August 11, 2008 at SFWMD, Building B1 Auditorium, West Palm Beach, 5-8:00 p.m.**
- **October 13, Ft. Lauderdale, FL, place to be announced, 5-8 p.m.**
- **December 15, 2008, Building B-1 Auditorium, West Palm Beach, FL, 5-8:00 p.m.**

Meeting Adjourned at 7:20 p.m.

6. WRAC Lake Okeechobee Committee Report - Malcolm "Bubba" Wade, Jr.,
Chair 15p 15d
- Public Comment 15m

7. Lunch - 12:30 - 1:15 p.m.

45m

8. Statewide Stormwater Rule Update - Janet Llewellyn, Director, Water Resource Mgt. Div., Florida Department of Environmental Protection

15p 30d

See supporting document: [State Strmwtr Pres WRAC 3 6 08.pdf](#)

Proposed “Statewide” Stormwater Rule



Janet G. Llewellyn, Director
FDEP Division of Water Resource Management
March 6, 2008

Florida's Statewide Stormwater Rule Initiative - Background

- Original statewide rule: Ch. 17-25, F.A.C. (1982) - focused on BMPs addressing total suspended solids as a stand-in for other pollutants
- Impaired waters data indicate nutrients are the primary source of water quality problems
- Need to update stormwater BMPs to address nutrients

Broad Objectives

- **Update statewide ERP stormwater baseline criteria, focusing on nutrients, while allowing for adoption of basin specific criteria**
- **Reduce number of water bodies impaired by nutrients (45% of current verified impairments are by nutrients)**
- **Meet the goal of Ch. 62-40, F.A.C. to maintain, during and after construction, the pre-development stormwater characteristics of a site**

TMDL Connection

- **Nutrient load from new development
“taken care of”**
- **Facilitates development of Basin
Management Action Plan (“BMAP”)**

Performance Standards

- Post-development nutrient loads not to exceed pre-development nutrient loads
- Pre-development is defined as undeveloped or native landscape
- Nutrients = total phosphorus (TP) and total nitrogen (TN)

Draft Rule Concepts

- Abandon the “one-size-fits-all” concept
- Each project gets evaluation to provide a site specific removal efficiency
- Provide applicants with a BMP menu for achieving specific removal efficiencies
- Different BMP combinations are likely necessary in different parts of the state
- Assumes treatment of nutrients ensures that other pollutants are treated sufficiently

Treatment Volumes

- Retention and detention design volumes are derived from Harper 2007 report
- Volumes will vary around the state based on local rainfall records
- Volumes will also vary according to pre and post-development conditions

Treatment Trains

- Encourage a series of treatment steps as a treatment train
- Provide criteria for establishing credit for each train “car”
- Provide flexibility to allow selection of appropriate string of “cars”
- Emphasis on source control and low impact development (LID) techniques

Low Impact Design Encouraged

- Pervious concrete
- Florida Friendly Landscaping
- Preservation of natural on-site vegetation and low soil compaction practices
- Green Roof/Cistern Systems

Stormwater Recycling

- Design criteria provided for stormwater recycling
- Not to be confused with reuse of reclaimed wastewater
- Provides high pollutant removals, groundwater recharge and volume conservation

Criteria for Retrofitting

- Special criteria for pure retrofit projects
- Pure retrofit defined as installation of new stormwater controls for existing developed land
- Redevelopment of existing developed land is not considered under the retrofitting criteria

Interagency Work Groups

- Technical issues to be addressed by experts from WMDs and DEP with input from a Technical Advisory Committee
 - Urban redevelopment
 - Size thresholds
 - Altered hydrology
 - Low impact design
 - Karst protection
 - Wet detention

Work Group - Urban Redevelopment

- How to avoid discouraging urban redevelopment by making criteria too difficult to achieve
- Define “redevelopment”
- Consider different (lesser) treatment criteria

Work Group - Size Thresholds

- **Determine feasibility of statewide thresholds for general and individual permits**
- **Determine lower size threshold and address very small sites that may not be able to attain the new treatment standards**

Work Group - Altered Hydrology

- How deal with altered hydrology for existing condition (ex. excessively drained conditions)?
- How to deal with legacy pollutants or existing “hot spots”?

Work Group - Low Impact Design

- What types of “LID” should be included for treatment credit?
- How much treatment credit should be provided for various LID practices?

Work Group - Karst Protection

- **How to delineate karst areas?**
- **What design criteria should apply in karst areas?**
- **Should all karst areas be treated the same?**

Work Group - Wetland Treatment

- What kind of wetlands should be used for treatment?
- How should wetlands be used?
- Establish treatment credits

Work Group - Wet Detention

- Review of wet pond criteria in view of 25 years working experience
- Determine maximum pond depths
- Review physical pond parameters

Additional Research Underway

- **Determine natural area stormwater nutrient concentrations**
- **Evaluate Florida Friendly Landscapes for nutrient discharge reduction**
- **Review literature on Florida wetlands hydrology and nutrient characteristics; particularly isolated wetlands**
- **Effectiveness of green roof systems**
- **Investigate stratification in deeper wet detention systems**

Technical Advisory Group

- Audubon
- 1000 Friends of Florida
- SW Florida Conservancy
- FL Homebuilders
- FL Engineering Society
- FL Chamber
- League of Cities
- Assoc. of Counties
- FLERA
- FL Stormwater Assoc.
- Dept Agriculture
- Private and public sector stormwater experts

Current Schedule

- Ongoing: DEP/WMD team developing draft language
- March 08 – October 08: TAC meetings
- October 08 – February 09: rule workshops
- July 09: DEP secretarial rule adoption

For Further Information

- **Contact - Jim Stoutamire at 850/245-8490 or jim.stoutamire@dep.state.fl.us**
- **Visit YYYYYY to sign up for email notification of statewide stormwater rulemaking announcements**

9. WRAC Issues Workshop Report - Lake Okeechobee Service Area Water Availability Rule Development, Chip Merriam, Dep. Executive Director, Water Resources, SFWMD 15p 15d

10. Kissimmee Basin Issues Update - Lawrence Glenn, Dir., Kissimmee Div., SFWMD 15p 15d
- See supporting document: [Kiss Riv, Hdwtrs and Lks Upd WRAC 3 6 08.pdf](#)
- Public Comment 15m

Historical Overview of Current Kissimmee Basin Projects: How the Pieces Fit and Overlap

Lawrence Glenn
Kissimmee Division - SFWMD



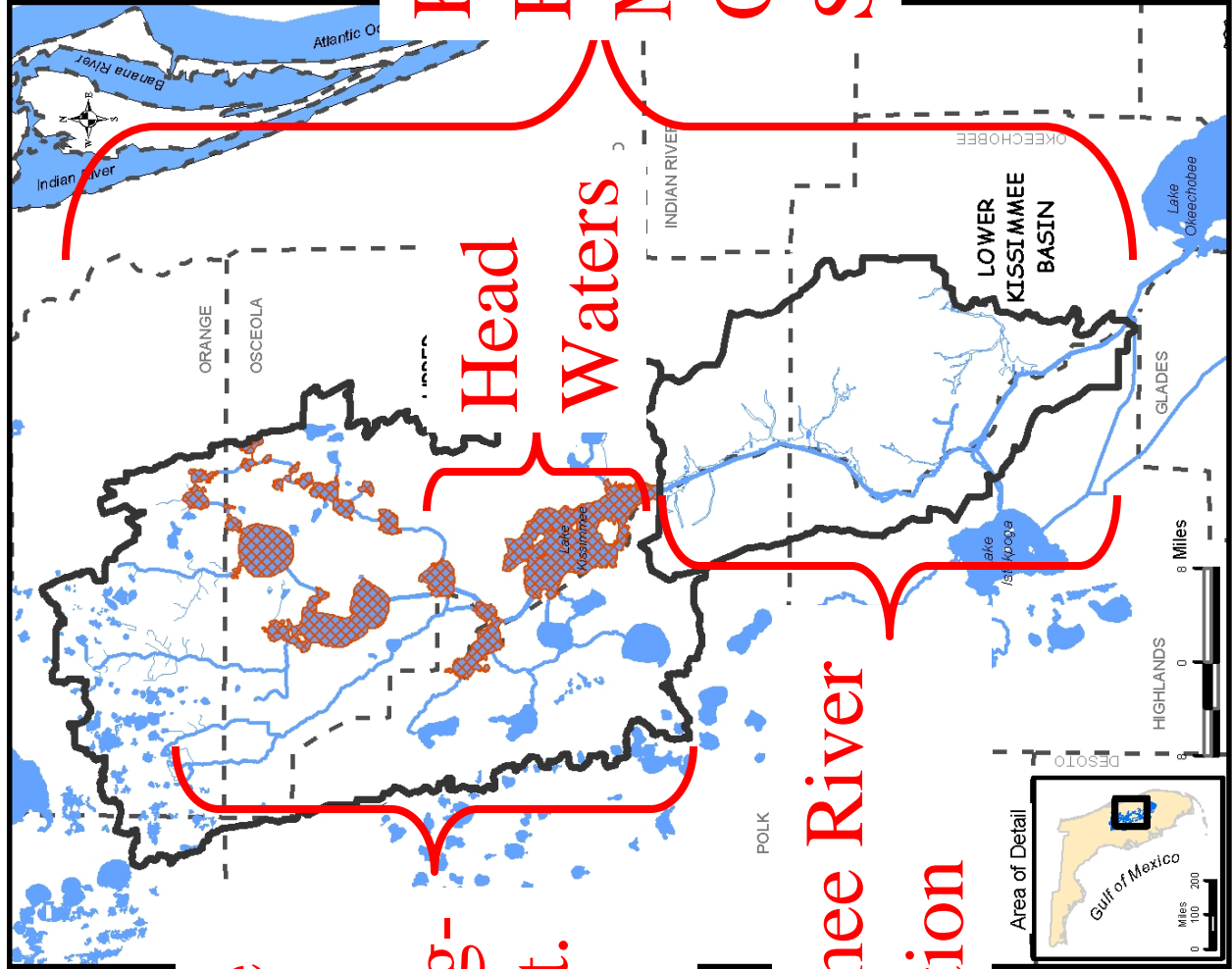
sfwmd.gov

Kissimmee
Chain of
Lakes Long-
Term Mngt.
Plan

Kissimmee
Basin
Modeling &
Operations
Study

Kissimmee River
Restoration

Head
Waters

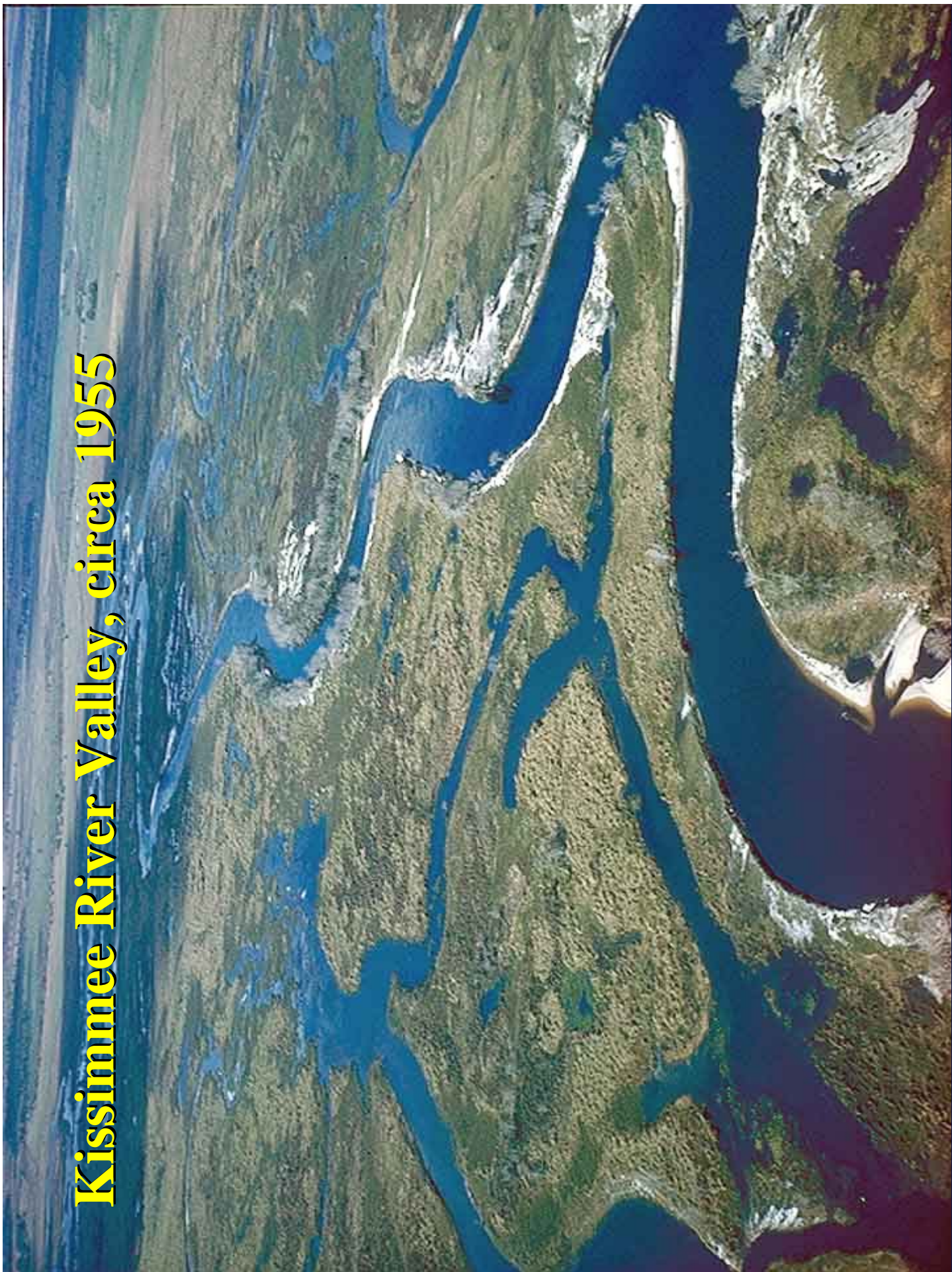


Project	KRR	HWR	KBMOS	LTMP
Basis	Ecosystem Restoration	Storage and Wetland Quantity and Quality	Assess Current Operations	Coordinate Management Actions and Operations
Goal	Ecological Integrity	Water for KRR	Operations criteria	Enhance and Sustain Lake Health
Evaluation	Ecosystem – level Performance Measures	Monitoring	Hydrologic Performance Measures	Hydrologic & Ecologic Performance Measures

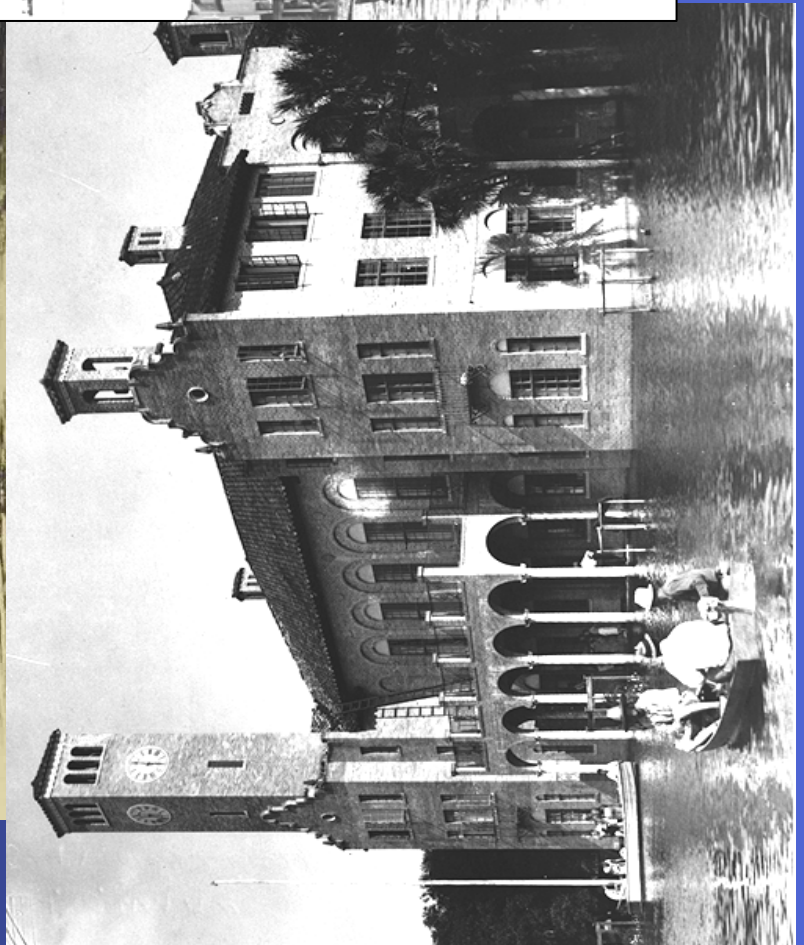
Project	KRR	HWR	KBMOS	LTMP
Basis	Ecosystem Restoration	Storage and Wetland Quantity and Quality	Assess Current Operations	Coordinate Management Actions and Operations
Goal	Ecological Integrity	Water for KRR	Operations criteria	Enhance and Sustain Lake Health
Evaluation	Ecosystem – level Performance Measures	Monitoring	Hydrologic Performance Measures	Hydrologic & Ecologic Performance Measures

Project	KRR	HWR	KBMOS	LTMP
Basis	Ecosystem Restoration	Storage and Wetland Quantity and Quality	Assess Current Operations	Coordinate Management Actions and Operations
Goal	Ecological Integrity	Water for KRR	Operations criteria	Enhance and Sustain Lake Health
Evaluation	Ecosystem – level Performance Measures	Monitoring	Hydrologic Performance Measures	Hydrologic & Ecologic Performance Measures

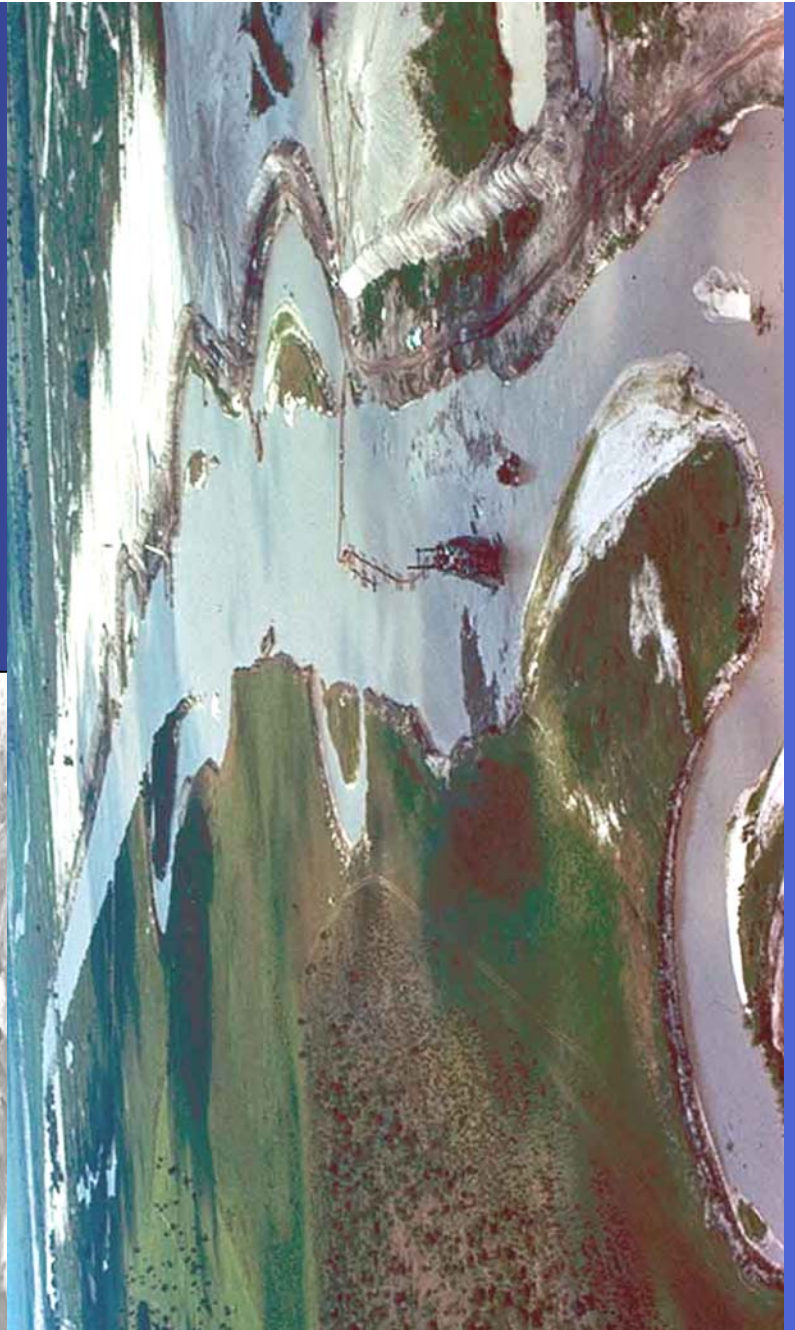
Kissimmee River Valley, circa 1955



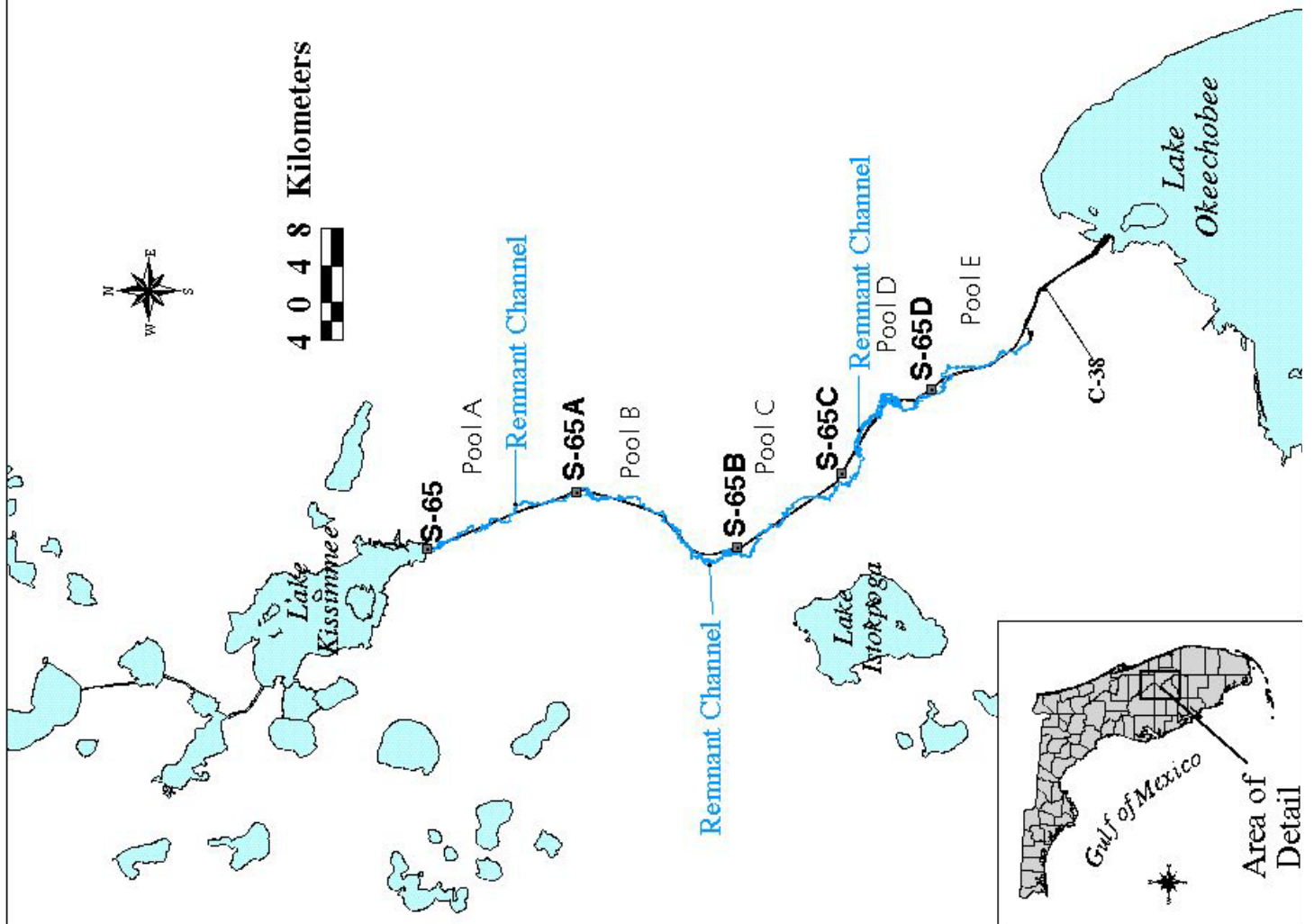
City of Kissimmee Flooding circa 1948



Channelization 1962-1971



Channelized Kissimmee River



Effects of Channelization

■ Elimination of Floodplain Inundation

- Shift to terrestrial plant communities
- Fewer wading birds, ducks using floodplain
- Loss of highly productive habitats for fish and aquatic invertebrates

■ Loss of flow in remnant river channels

- Increases in floating vegetation
- Increases in organic matter deposition
- Lower dissolved oxygen
- Shift in fish, invertebrate communities

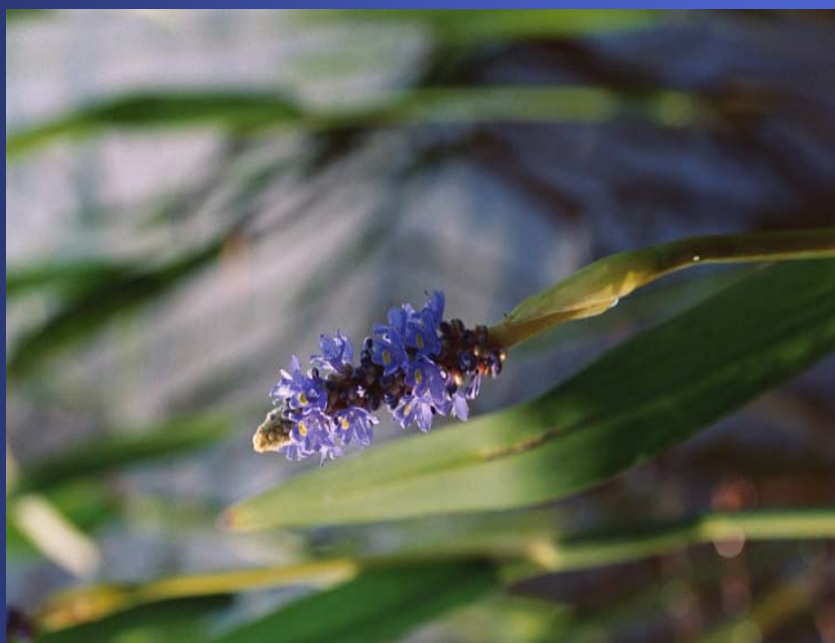


Pre-channelization

Post-channelization

Restoration Initiative

- 1971 – USGS Report
- 1976 – Kissimmee River Restoration Act (FL legislature)
- 1978 – 1st Feasibility Study
- 1984 – SFWMD Demonstration Project
- 1990 – 2nd Feasibility Study
- 1992 – Water Resources Development Act authorizes KRR (Federal legislature)
- 1994 – Project Cooperative Agreement



Mandates

- 1976 Kissimmee River Restoration Act
 - Restore seasonal water level fluctuations in the floodplain
- 1992 Water Resources Development Act
 - Restore river/floodplain ecosystem according to criteria outlined in 1990 Alternative Plan Evaluation and Preliminary Design report and 1991 Integrated Feasibility Report/EIS

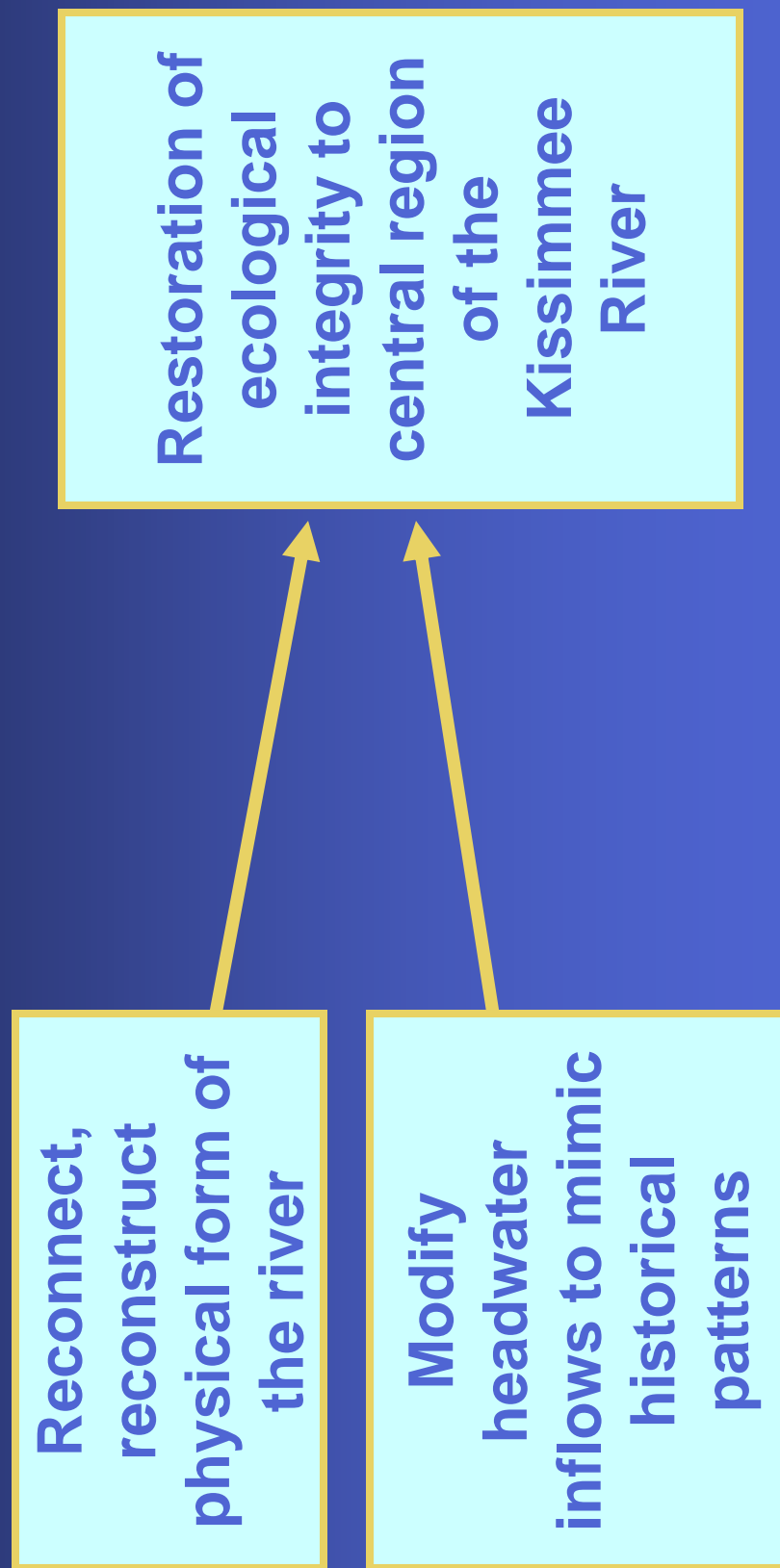
5 Restoration Criteria

- Continuous flow with duration and variability comparable to pre-channelization periods
- Average flow velocities between 0.8-1.8 ft per second, when flow within bank
- Stage discharge relationship resulting in overbank flow $>1400 \text{ ft}^2/\text{sec}$ and $>2000 \text{ ft}^2/\text{sec}$
- Stage recession rates on floodplain $<1 \text{ ft/month}$
- Floodplain inundation comparable to historic hydrographs

Ecological Integrity Goal

Defined as “the capability of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to natural habitat of the region”. (Frey 1975, Karr and Dudley 1981)

Approach for the Kissimmee River Restoration Project



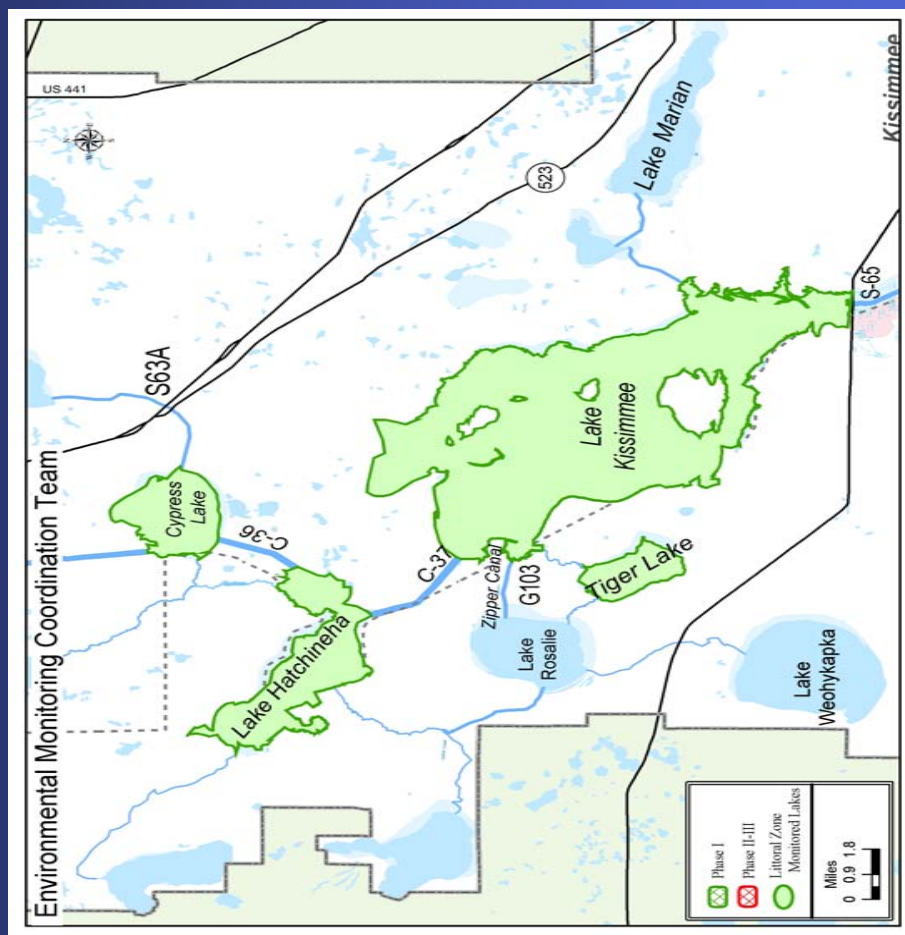
Kissimmee River Restoration Project

- 50/50 cost share USCOE/SFWMD
 - \$620 Million
- Backfill 22 mi of C-38 canal
- Recarve/reconnect more than 40 mi of river channel
- Remove 2 water control structures (one has been removed)
- Headwaters Revitalization Project – to provide outflows from headwater lakes needed to restore the Kissimmee River - 2011
- Comprehensive restoration evaluation program – thru 2017



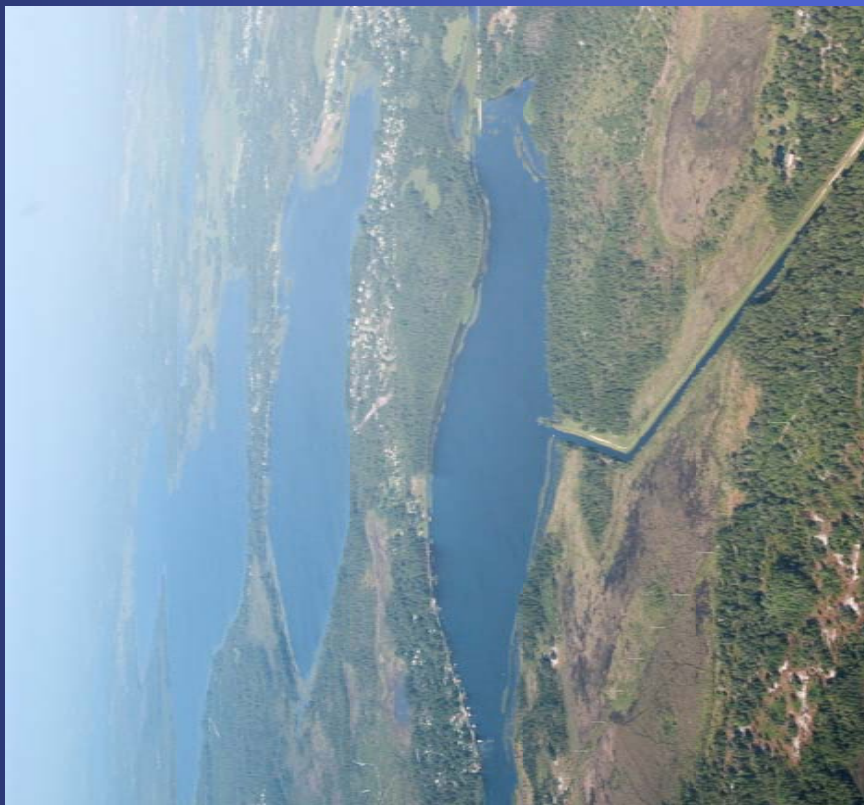
Headwaters Revitalization (Lakes Kissimmee, Hatchineha, Cypress, Tiger)

- Changes how S-65 structure is operated at south end of Lake Kissimmee – 1996 Project Report/EIS
- Provide greater and more natural lake level fluctuations and delivery to Kissimmee river
- Expand existing peripheral marsh habitats (~7200 acres)
- Provide adequate operational flexibility to incorporate management strategies that meet the needs of the Kissimmee River and lower chain of lakes.



KCOL Long Term Management Plan

- Adaptive management framework for Inter-agency decision making
- Assessment performance measures and indicator measures for lakes

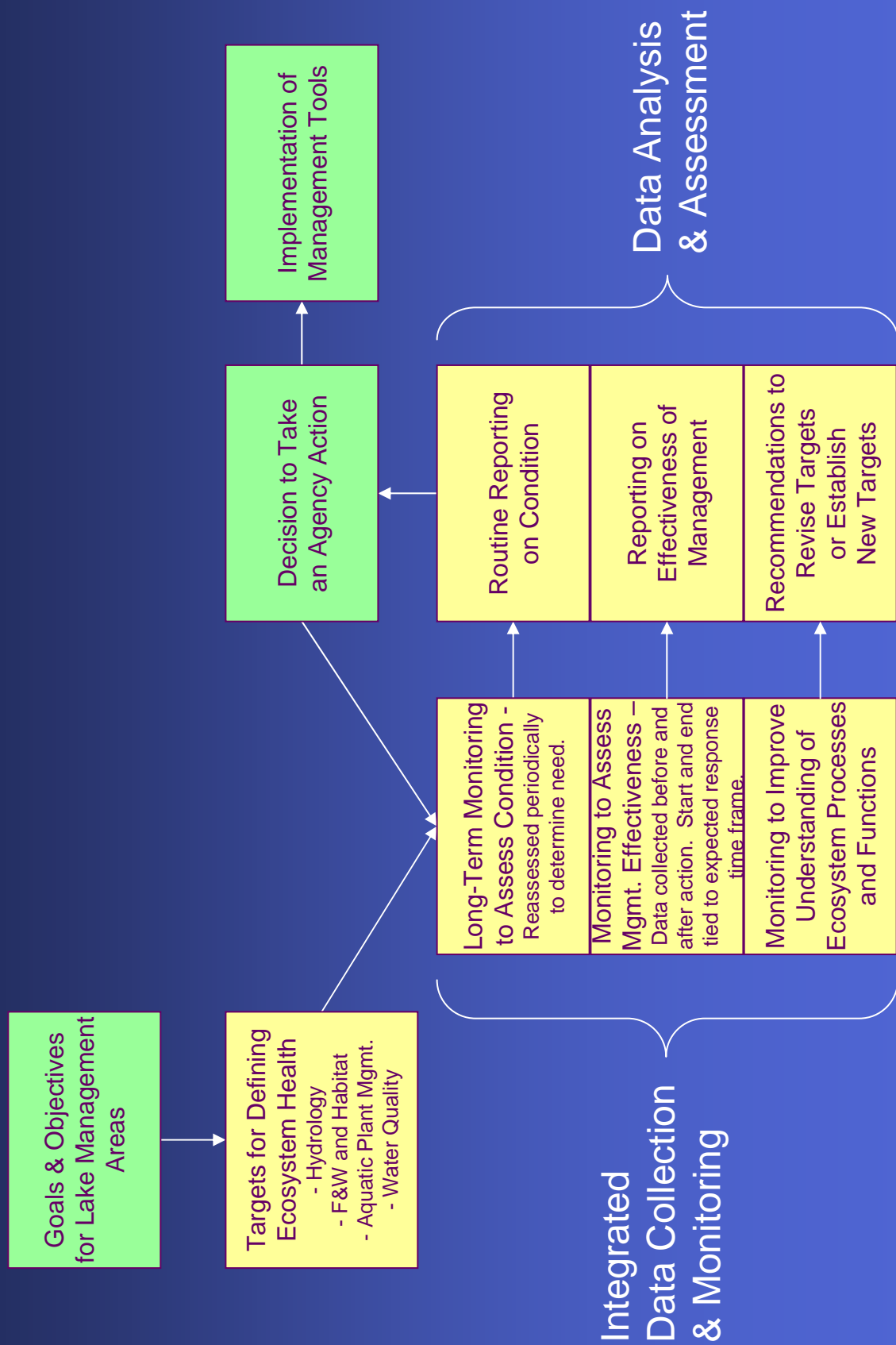


Effects of Channelization & Water Regulation on the Kissimmee Chain of Lakes

- Loss of fluctuating lake water levels
 - Increased in organic matter deposition along the lakeshore
 - Lower dissolved oxygen
 - Shifts in vegetation communities to more problematic species



Role of Assessment Activities in Decision-Making and Application of Management Tools

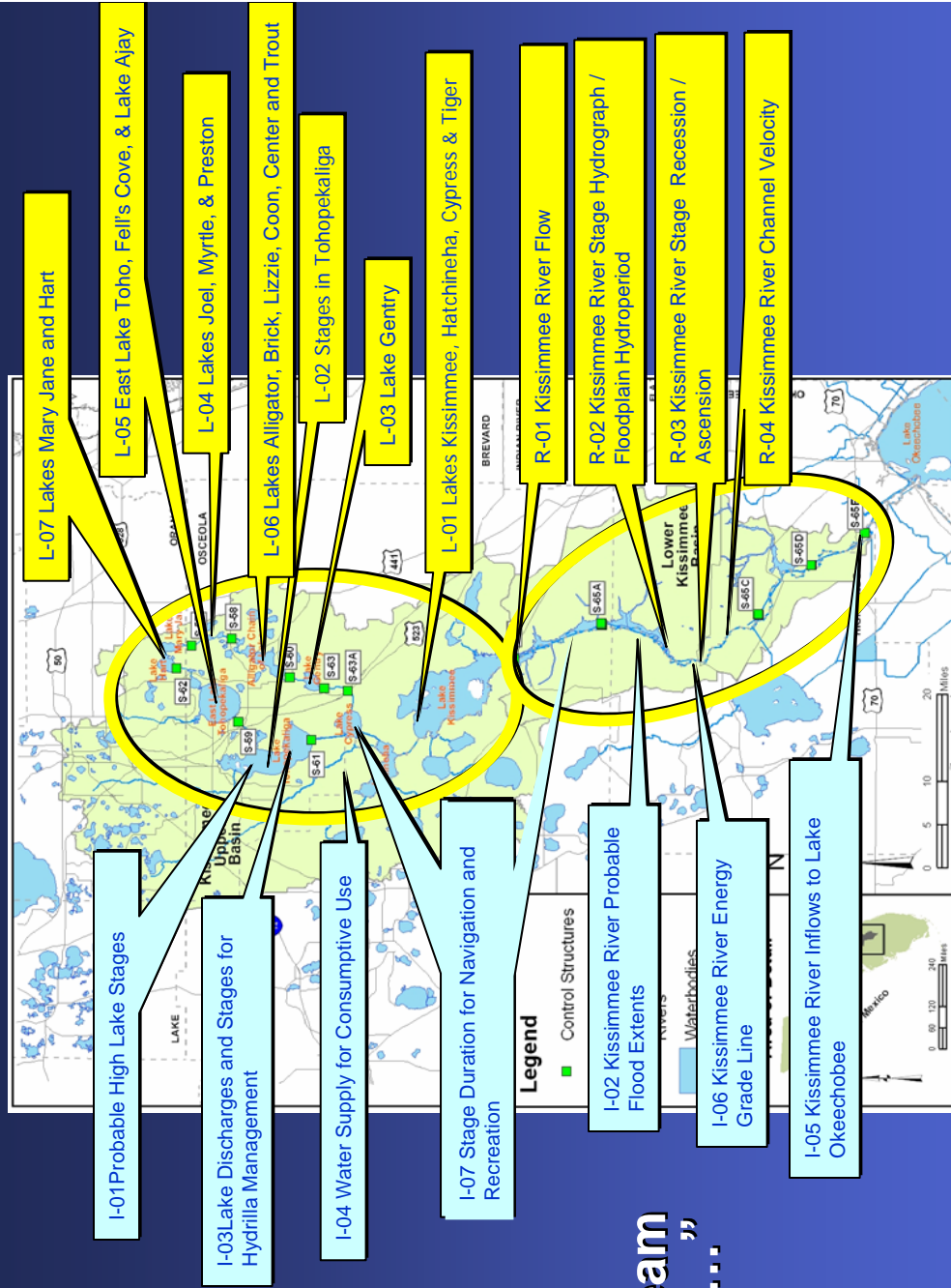


Kissimmee Basin Hydrologic Assessment, Modeling, and Operations Study

KBMOS Goals

“...achieve a more acceptable balance among operational objectives while balancing downstream ecosystem impacts...”

- Flood Control
- Water Supply
- Aquatic Plant Management
- Natural Resources



A suite of **Performance Measures** and **Performance Indicators** were developed to evaluate alternatives

Desired Hydrology

- **Lakes**
 - Seasonality and Variability in Lake Stages
 - Stage Recession and Ascension Rates
 - Extreme high and extreme low events at a specified frequency, timing, and duration
- **River**
 - Continuity and Seasonality of Flows
 - Stage Recession and Ascension Rates
 - Floodplain Inundation (depth and duration)

Evaluation Performance Measures

- Define the natural resource requirements for meeting the ecological integrity goal for the river and the ecosystem health goal for the lakes.

Evaluation Performance Indicators

- Define flood control, water supply, aquatic plant management, and other operational requirements for the C&SF project

Constraint Evaluation Performance Indicators

Flood Control

- I-01. Probable High Lake Stages
- I-02. Kissimmee River Probable Flood Extents

Downstream Ecosystems (Lake Okeechobee)

- I-05. Kissimmee River Inflows to Lake Okeechobee

Energy Grade Line

- I-06. Kissimmee River Energy Grade Line

Opportunity Evaluation Performance Indicators

Water Supply

- I-04. Water Supply for Consumptive Use

Navigation

- I-07. Stage Duration for Navigation and Recreation

Aquatic Plant Management

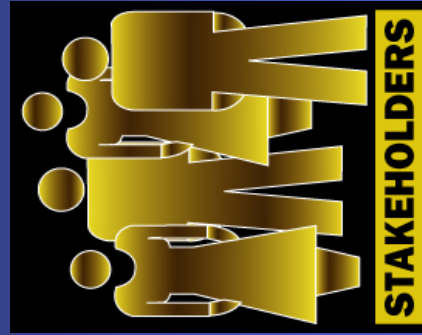
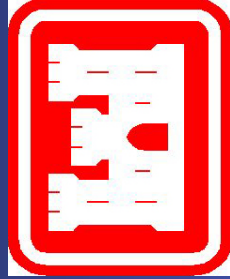
- I-03. Lake Discharges and Stages for Hydrilla Management

Limitations

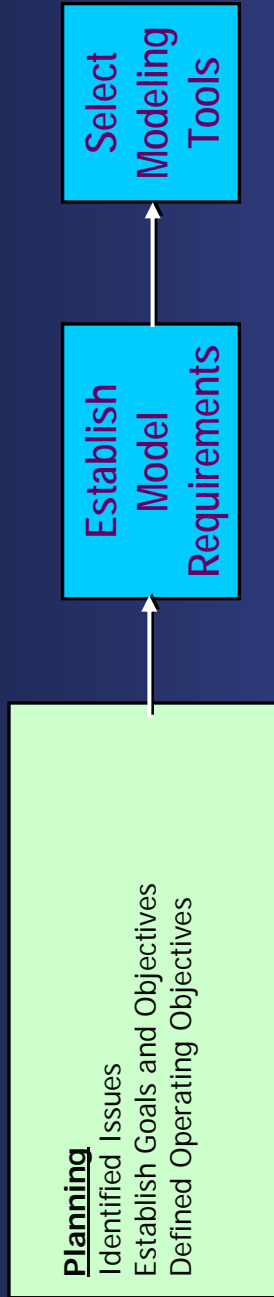
Work within:

- existing infrastructure (No structural modifications)
- Existing land interests (No additional land acquisition)

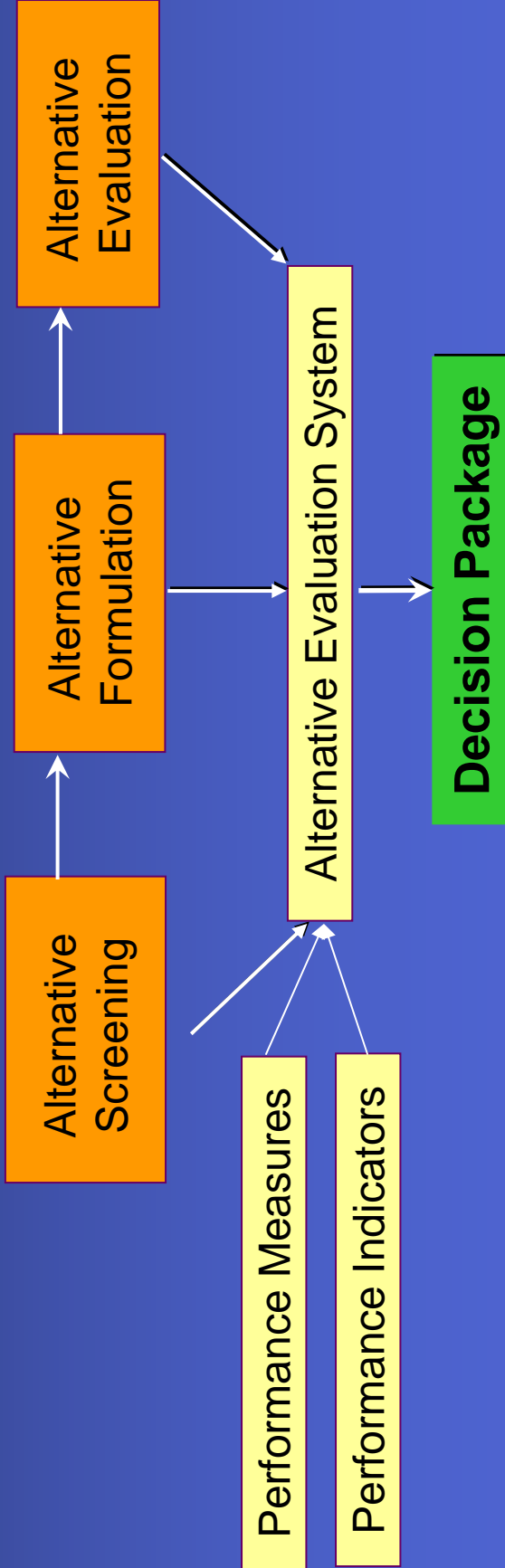
Study Team



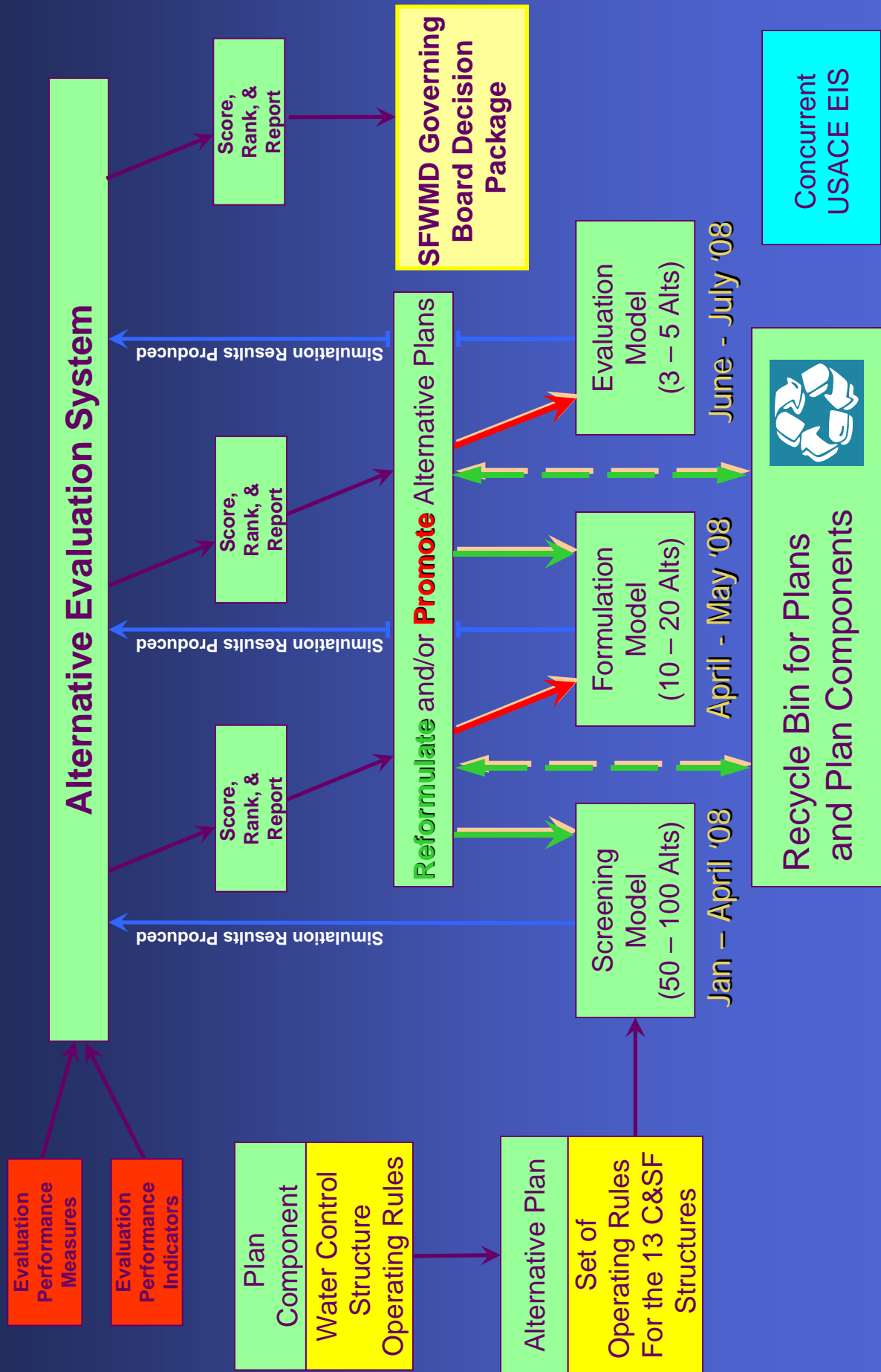
Phase I



Phase II: Alternative Plan Selection Process



Alternative Plan Selection Process



EIS for Modification of KB Structure

Operating Criteria

- Evaluate alternatives relative to potential beneficial and adverse effects on
 - Flood control
 - Navigation
 - Water quality
 - Water supply
 - Wetlands and fish and wildlife habitats and values
 - Endangered and threatened species
 - Historical or archaeological resources
 - Public use and recreation

EIS

- Initiated May 2005
- Scoping letter sent out July 2005
- KBMOS planning process served as basis for USACE EIS scoping
- Scheduled for completion in late 2009

Inter-agency and stakeholder meetings to date

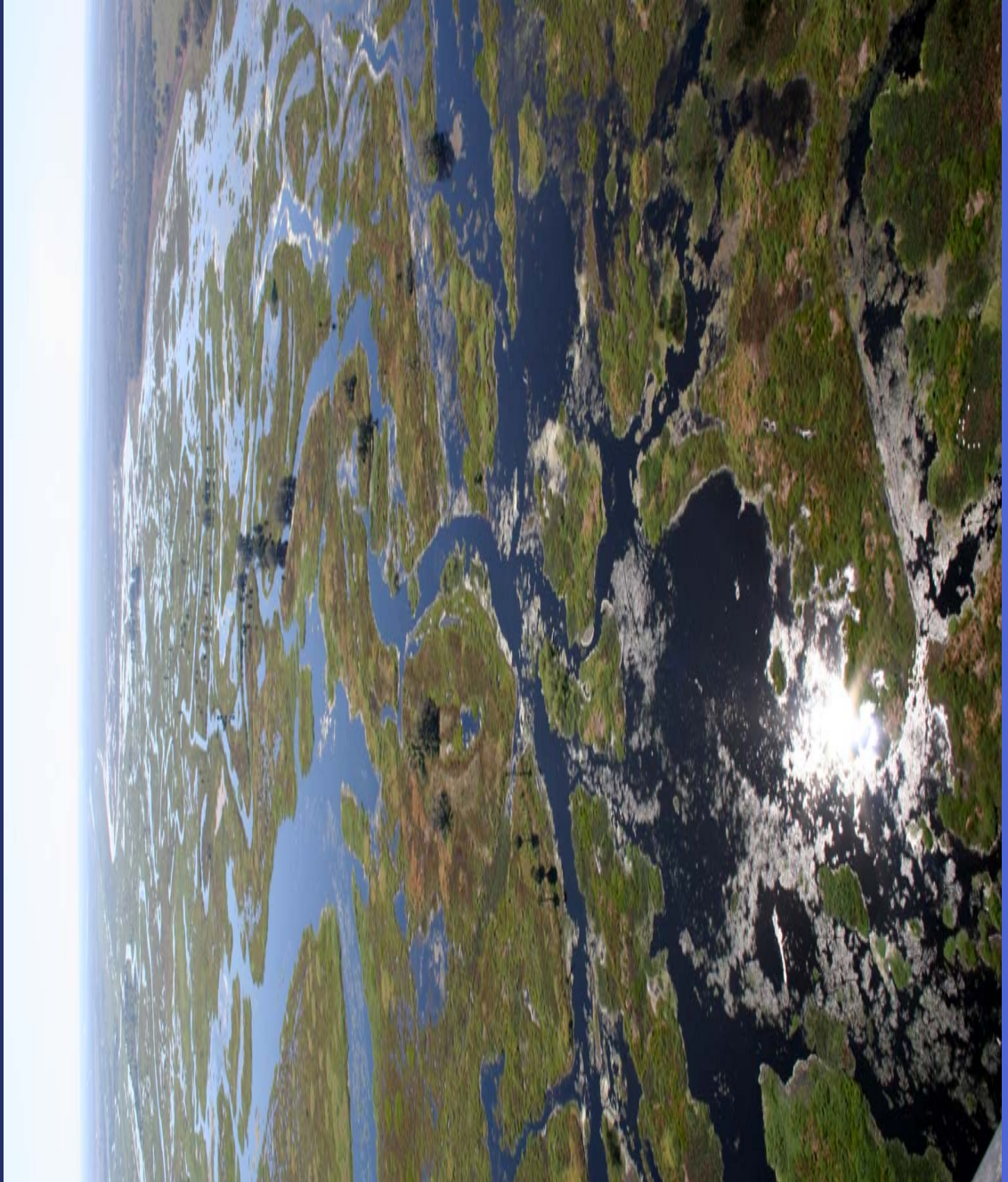
- July 8, 2004
- August 19, 2004
- August 31, 2004
- October 26, 2004
- September 29, 2005
- November 14, 2005
- November 16, 2005
- February 23, 2006
- February 28, 2006
- September 13, 2006
- February 15, 2007
- February 23, 2007
- March 1, 2007
- March 13, 2007
- March 16, 2007
- March 20, 2007
- March 27, 2007
- April 2, 2007
- April 3, 2007
- April 10, 2007
- April 17, 2007
- April 19, 2007
- April 25, 2007
- May 1, 2007
- May 8, 2007
- May 14, 2007
- May 15, 2007
- May 22, 2007
- May 29, 2007
- June 5, 2007
- July 12, 2007
- September 13, 2007

Future Updates to Lake O WRAC, WRAC, Governing Board

- Screening Tool Results – June 2008
 - Significance: Provides an overview of the alternative operations being considered
- Formulation Model Results – July 2008
 - Significance: Identifies the 3 alternatives that will advance for final consideration in the EIS process
- Evaluation Model Results – September 2008
 - Presents the results of the evaluation of the 3 alternatives and provides information related to flood control, Lake Okeechobee, and water supply for the best natural resource alternatives
 - Significance: Defines water for Kissimmee River restoration and supply



Thank You

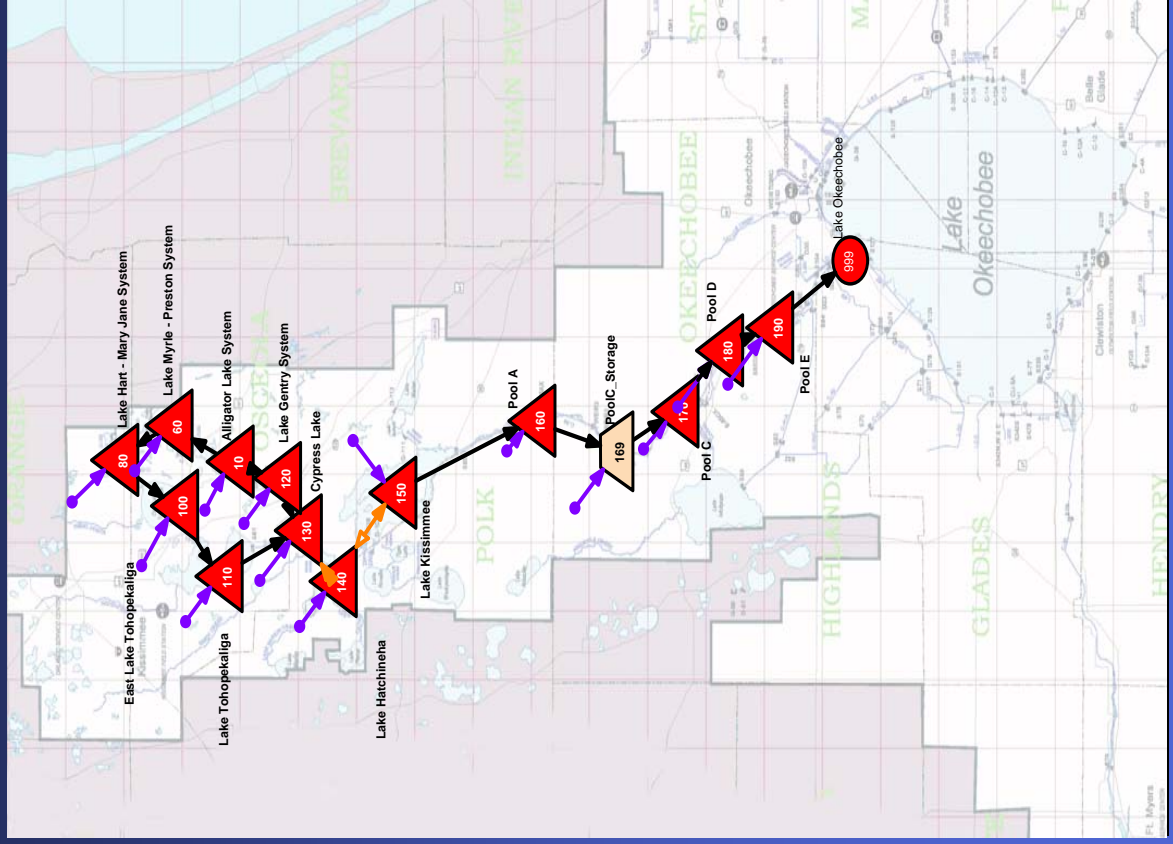


Back-pocket slides



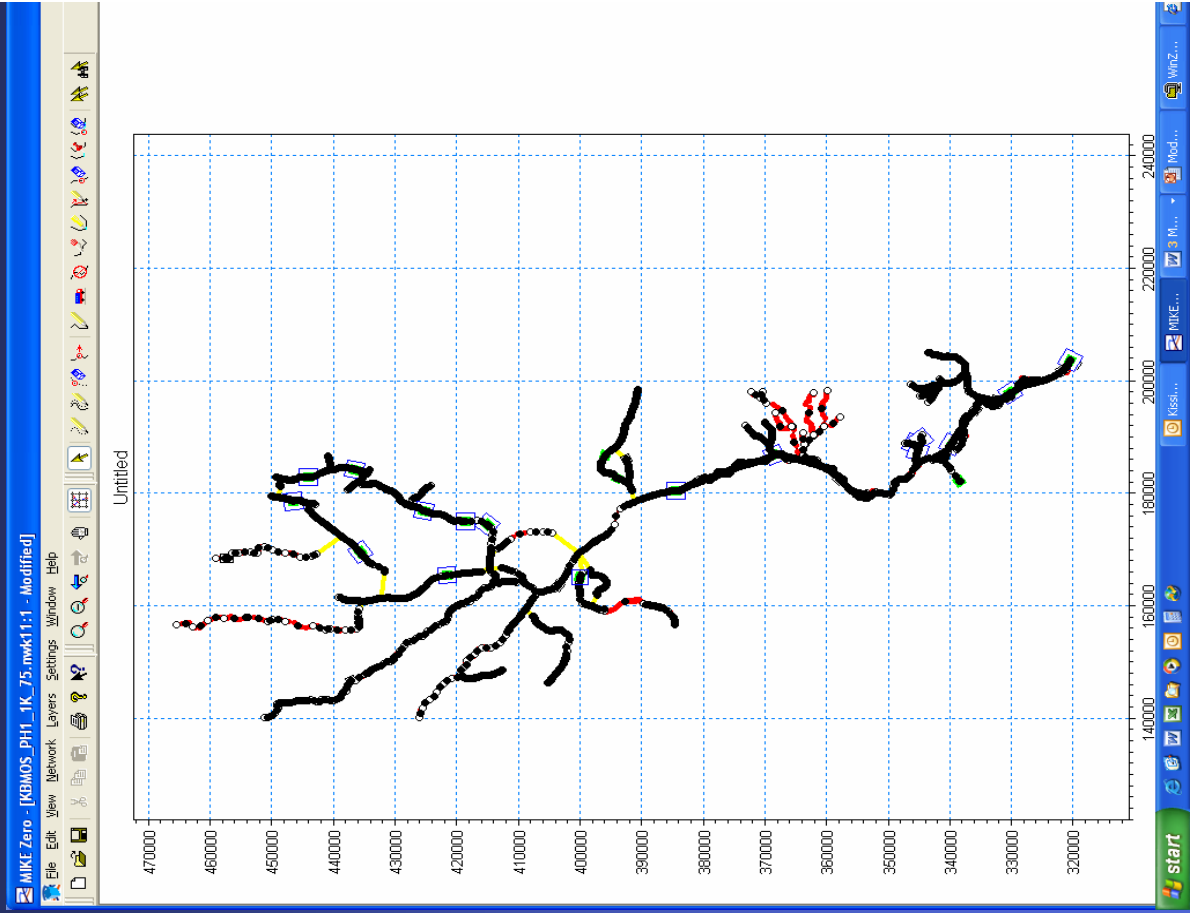
Screening Tool – OKISS

- Screening Tool is a water budget model
- Uses Operations Control Language (OCL) to describe Structure Operations
- Output:
 - Daily Flow – the amount of water moved over time
 - Daily Stage – the elevation of the water surface
 - Daily Storage – volume of water in lakes and floodplain
- Many ways to use flow and stage to evaluate alternative plans



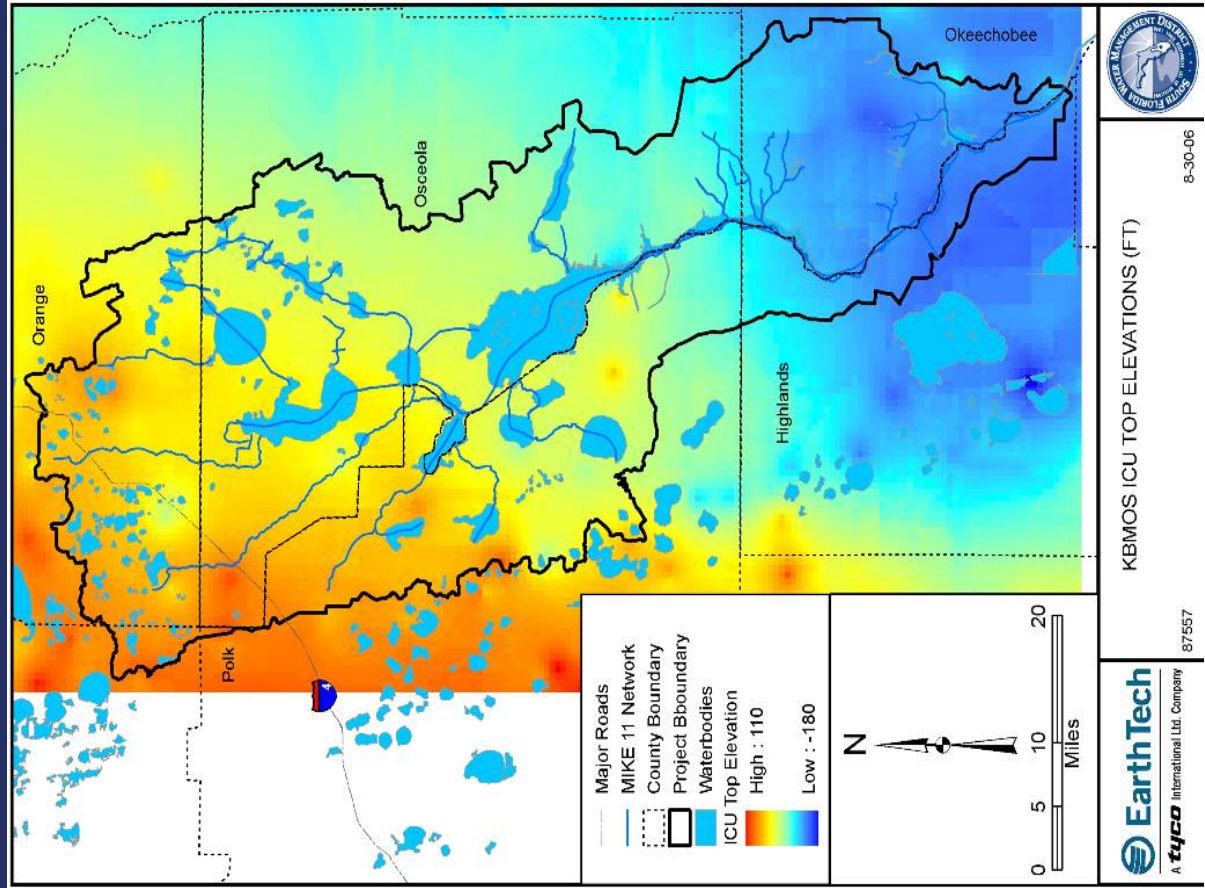
ALTERNATIVE FORMULATION TOOL

- Mike 11 running decoupled from Mike SHE
- Hydrologic Inflows to be obtained from the Base Condition runs in the fully coupled model (Mike SHE/Mike 11)
- Use full cross sections to represent the extension of the Kissimmee River Floodplain



ALTERNATIVE EVALUATION TOOL

- Fully Couple MIKE SHE/MIKE 11 model
- 3-layer 3,000 ft grid cell including the Floridan Aquifer System (FAS) and the Intermediate Confining Unit (ICU)
- Alternatives will be evaluated with a 1-layer 1,000 ft grid cell model which will use bounded with conditions developed with the 3-layer model.



Model Run Times

- Screening Tool (OKISS) – 15 minutes
 - Water budget model
 - Daily Flow, Stage, Storage
- Formulation Tool (MIKE 11) – 2 days (48 hours)
- Evaluation Tool
 - MIKESHE/11 – 1000 ft model 7 days (168 hours)
 - MIKESHE/11 - 3000 ft model 3.8 days (91.2 hours)
- Performance Measure Evaluation Tool – 15 minutes

11. Adjourn: 3:15 p.m